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Hyon et al.

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(54)	ULTRA HIGH MOLECULAR WEIGHT
` ′	POLYETHYLENE MOLDED ARTICLE FOR
	ARTIFICIAL JOINTS AND METHOD OF
	PREPARING THE SAME

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(*) Notice:

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Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

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(56)References Cited

U.S. PATENT DOCUMENTS

3,886,056	*	5/1975	Kitamaru et al	204/159.5
4,224,696	*	9/1980	Murray et al	623/20
4,587,163		5/1986	Zachariades	428/292
4,636,340	*	1/1987	Itaba et al	522/161
4,655,769	*	4/1987	Zachariades	623/1
4,747,990		5/1988	Gaussens et al	264/322
5,030,402		7/1991	Zachariades	264/138

5,030,487	*	7/1991	Rosenzweig	428/34.9
5,066,755	*	11/1991	Lemstra	522/161
			Shih	
5,276,079	٠	1/1994	Duan et al	524/386
5,358,529	*	10/1994	Davidson	. 623/20
5,405,393	*	4/1995	Falkenstrom	623/18
			Bastiaanasen et al	
5,728,748	*	3/1998	Sun et al	522/161

FOREIGN PATENT DOCUMENTS

WO 95/06148 3/1995 (WO).

OTHER PUBLICATIONS

Kitamuru, R. et al., "Size and Orientation of Cristallites in Lightly Cross-linked Polyethylene, Crystallized from the Melt Under Unaxial Compression", Die Makromoekulare Chemie, vol. 175, 1974, pp. 255-275.

Kitamura, R. et al., "The Properties of Transparent Film Made from Linear Polyethylene By Irradiation Cross-Linking", Macromolecules, vol. 6, 1973, pp. 337-343.

Kitamura, R. et al., Structure and Properties of Lightly Crosslinked Crystalline Polymers Crystallized or Processed under Molecular Orientation, Journal of Polymer Science: Macromolecular Reviews, vol. 14, 1979, pp. 207-264.

* cited by examiner

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ABSTRACT

An ultra high molecular weight polyethylene molded article for artificial joints has molecular orientation or crystal orientation in the molded article, and is low in friction and is superior in abrasion resistance, and therefore is available as components for artificial joints. Further, the ultra high molecular weight polyethylene molded article for artificial joints can be used as a component for artificial hip joints (artificial acetabular cup), a component for artificial knee joints (artificial tibial insert) and the socket for artificial elbow joints, and in addition to the medical use, it can be applied as materials for various industries by utilizing the characteristics such as low friction and superior abrasion resistance.

11 Claims, No Drawings